COLONY OF MAURITIUS

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INSTITUTE

Annual Report

of the

Department of Agriculture

1941

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Annual Report of the Department of Agriculture for 1941

PART I

1. Meteorological Conditions

Except during the month of May, when rainfall was considerably below normal, the year was a favourable one in regard to moisture. Temperature was generally well above normal. No cyclone visited the Island.

2. Sugar production

The total cane reaped approximated 2,816 thousand metric tons and was 6% above last year's production. The average sucrose content was 13·27 as against 13·31 last year and the average extraction of sugar per cent. of cane 11·49 as against 11·45 in 1940.

The total production of commercial sugar amounted to 323·68 thousand metric tons and is the highest on record. Of the total sugar produced 276·67 thousand metric tons consisted in Raws; Vesous amounted to 46·79 thousand metric tons; low sugars made up the balance.

3. Area under sugarcane

An appreciable increase in the area under cane took place in 1941; but no accurate figures are as yet available.

4. Sugar market and disposal of the sugar crop

The total production was purchased by Government on the same terms as last year.

The total sugar exported during the 1940–41 year (August, 1940, to 31st July, 1931) was 304,097 metric tons, of which 303,835 went to Great Britain.

The amount exported between 1st August, 1941, and 31st December, 1941, was 181,768 metric tons of which 181,610 went to Great Britain. Local consumption in 1940–41 amounted to 12,203 metric tons.

5. Labour and Cost of Living

A continuous rise in the cost of living was in evidence during the year.

In the first quarter of 1941 the cost of living was indexed at 134 and in the last 168, as against 100 pre war.

6. Importation of agricultural machinery and fertilisers

In 1941, machinery to the value of Rs. 891,228 was imported and tramway material to the value of Rs. 43,434.

The importation of farm tractors and ploughs amounted to Rs. 85,348. A total of 13,410,883 kilos of chemical fertilizers valued at Rs. 3,031,390 was imported in 1941.

7. Insect pests and plant diseases

On sugarcane: while Phytalus continues its sporadic attacks, the spotted borer *Diatraea Mauriciella* Wlk. continues to cause fairly severe damage in certain localities. A recrudescence of the scale insect *Chionaspis tegalensis* was in evidence in the western localities of the Island.

Importation of parasites from Madagascar and other cane growing countries have been discontinued owing to war conditions.

On tobacco: the prevalence of Black Shank disease, reported previously, has been very severe this year and spread to all districts, causing considerable damage to many plantations. The urgent problem created by the increasing virulence of this disease has necessitated immediate steps to be taken and a scheme is under way for a special line of research in this direction at the Tobacco Research Station. Mosaic has been reported from plantations in all districts and the attack appears to have been more virulent than the year previous.

8. Tobacco

During the year 381,014·7 kilos of tobacco were produced, consisting of—

		Kilos
Flue cured	...	254,972·5
Air cured	...	126,042·2
Total	...	381,014·7

Rodrigues' contribution to this total amounted to 17,969 kilos. The area under tobacco in 1941 was 561·81 acres.

9. Fibre, Pineapple, Tea and Coconut

The exportation of fibre for 1941 was 544 metric tons, in defect by 429 tons on last year's figures. The value of this year's export was Rs. 99,958. Work has been resumed at the bag factory and Government has offered to purchase 300 tons of fibre from producers.

In relation to pineapple, conditions have been very unsatisfactory during the year. The pineapple factory turned out 2,662 cases only and the exportation was valued at Rs. 34,130.

With regard to tea, imports have been limited, by recent legislation, to the annual average of imports for the last three years. The production at Bois Chéri for 1940–41 was 105,000 kilos, and at Curepipe tea garden 36,305 kilos. The total acreage under tea in 1941, was 760 acres approximately.

In 1941, the export of copra was 132·1 metric tons valued at Rs. 58,613, while there was no export of coconut oil. Clarified coconut oil is now finding a ready market locally, while the hydrogenation process has been put under way at the Innova refinery.

10. Alcohol

The total quantity of alcohol distilled for human consumption amounted to 709,164 litres, and the quantity distilled for industrial purposes to 3,190,147 litres.

In 1941 seven distilleries were in operation.

11. Veterinary and Livestock

The sanitary condition of cattle has been in general very satisfactory during the year.

Early in 1941 a shipment of 150 beef cattle was received from South Africa as an attempt at replacing the cattle imported from Madagascar. The attempt was not renewed.

The imported beef bulls (Afrikander and Charolais), crossed with the local breed, are giving satisfactory results.

A modern dairy has been erected at Phœnix to provide pasteurized milk, butter and cream to an increasing number of consumers desirous of utilizing standard products.

12. General

I wish to record my deep appreciation of the measure of assistance which I have unhesitatingly been accorded by the staff of the Department during the year.

The work of the Sugarcane Research Station and the various Divisions has, as usual, been conducted in an atmosphere of close co-operation with the planting community of the Island. To the very large number of cultivators—members of all classes of the community—who have afforded opportunities for special investigation, I take this opportunity of presenting the gratitude of this Department.

G. E. BODKIN,
Director of Agriculture.

PART II

Report on the Sugarcane Research Station and Divisional Reports of the Department of Agriculture

Sugarcane Research Station

Many of the officers of the Sugarcane Research Station have been called upon to undertake special duties in connection with war services, but, in spite of this, satisfactory progress has been made with the various research programmes. A fairly detailed account of the work performed is given in the Twelfth Annual Report.

A comprehensive breeding programme was successfully carried out by the Geneticist's Division. Of the resulting seedlings, about 16,000 were planted in the field. Selection and testing work was continued, and several estate trials with new varieties were laid down. Following the satisfactory results obtained in trials under various conditions, the variety M.112/34 was released for general distribution in December. Progress was made in several special investigations connected with the breeding and testing work.

In the Chemical Division, further work was done in connection with foliar diagnostic methods for recognition of deficiencies of plant food in the soil, and a survey was carried out on eighteen estates to determine effects of climate and type of land tenure. A number of experiments were harvested; two in the north dealing with the optimum quantity of nitrogenous fertilizers to virgin canes. Generally, the yield per arpent was increased by successive additions, but the quality was affected, and 225 kgs. sulphate of ammonia per arpent appeared to be definitely bad.

In the Botanical Division, trials on the best time for the application of fertilizers replicated for 3 years on several estates are now yielding significant results. Under Mauritius conditions application in one dose at, or shortly after, planting appears to be the best procedure. Trash burying has been proved to be an uneconomical practice.

Planting in ridges seems to offer advantages over planting in furrows in very wet districts. Resistance or susceptibility of sugarcane to red-rot disease may be indicated by simple determinations on the extracted juice. Growth methods for the determination of nutrient deficiencies have been worked out.

The officer in charge of the Sugarcane Research Station was called upon to administer the scheme for rationing chemical fertilizers, all nitrogenous fertilizers being controlled during the 1941–42 season. Allotments were made on a regional basis, and up to the end of the year the distribution authorized amounted to 78·3% of the allotments. The officer in charge of the Sugarcane Research Station has also been appointed Food Production Officer to administer the Government Notices dealing with the production of planting material of various foodstuffs.

N. CRAIG, *Officer in charge,*
Sugarcane Research Station.

Agricultural Division

1. Central Experiment Station, Reduit

The propagation of selected new sugarcane varieties raised by the Sugarcane Research Station continued. Numerous applications were received for cuttings of variety M.112/34 which was recently released for distribution.

The cane crop in excess of the material sold for propagation (129,860 kilos) was sent to Trianon factory.

Pineapples.—New plots were planted with Smooth Cayenne pineapples. The planting distance was reduced in accordance with results obtained in previous trials. The ripe fruits were consigned to the Mauritius pineapple factory for canning. It is not intended in future to extend the existing plantations as there is a possibility of the factory ceasing operations on account of the war and other factors.

Food crops.—With the new development in the war situation, considerable efforts have been made to extend the cultivation of food crops, chiefly manioc, sweet potatoes and maize on sugar estates in the Colony. Large quantities of planting material of various food crops were distributed free to many applicants.

Selection work with maize was begun and some interesting results, were obtained; it is hoped to continue the work next year. The six varieties of maize imported from South Africa gave disappointing results; they suffered much from borer attacks and from various diseases, chiefly bacterial stalk rot; their propagation throughout the Island was terminated.

Plots of adlay, pigeon peas, cow peas, rice, pistache, maize, etc., were established to serve as demonstration plots and to obtain seeds for distribution.

2. Barkly Experiment Station, Beau Bassin

Many persons visited this station during the year. A large number of economic plants were raised in the nursery for sale to the public and for free distribution to Government institutions, school gardens, allotments, etc.

The revenue for sale of plants amounted to Rs. 1,544.16. Plants and seeds were exchanged with various institutions abroad, but on a smaller scale than in the past owing to war conditions.

It is interesting to record that for the first time in this Colony seedlings of *Cinchona Succirubra* were raised from local seeds collected at Barkly and in the plantation made in the "Trou aux Cerfs" a few years ago.

During the fruiting season, free supplies of litchis. papaws, bananas and pineapples were made to ships of the Merchant Navy calling at Port Louis.

3. Royal Botanical Gardens, Pamplemousses

Economic Section.—The propagation of sugarcane and food crops for distribution to planters was extensively carried out.

42,720 kilos of canes were sold to Belle Vue Estate. The experimental plots of coffee, vanilla, pepper, arrow root, etc., were kept in good condition.

A small area was planted with chillies (*Capsicum annum var longum*). The ripe chillies were cured in three different ways: (1) dipped in boiling water, then dried in the sun; (2) dried in the sun without any previous treatment; (3) dipped in boiling cooking oil and then sun-dried. The oil-cured produce was definitely superior.

Kept in air-tight jars for eight months, the oil-cured chillies were free from mould and had retained their texture and colour. The main points to follow when curing chillies are: (1) to choose a suitable kind of cooking oil, (2) to raise the oil to the boiling point and then immerse the chillies in this oil for sufficient time without breaking the fruits.

Ornamental Section—The gardens were kept in good condition throughout the year. Numerous plants were raised in the nurseries, 366 mango grafts, 202 litchis layers, etc., were sent to Abercrombie Nursery and Barkly Experimental Station. A new pond was made and planted with an interesting collection of water lilies.

The Victoria Regia raised from seeds received from British Guiana is now well established and is an object of attraction to many visitors; it has fruited, seeds have been distributed to several persons. Seedlings were raised at Barkly and are making rapid growth.

All buildings were kept in good condition.

4. Abercrombie Nursery

The following plants were sold during the year—

90 litchis layers, 127 mango grafts, 250 citrus plants, 266 palms and 1,265 miscellaneous plants. The revenue from these sales amounted to Rs. 768.40.

5. School Gardens

The 31 registered school gardens were visited at regular intervals by officers of the Division, short lectures were delivered to the pupils and practical classes held.

Prizes for the best gardens were awarded as follows—

1st prize of Rs. 40 to Poudre d'Or Government School,

2nd prize of Rs. 30 to Plaine des Papayes Government School,

3rd prize of Rs. 25 to Ruisseau Rose Government School,

4th prize of Rs. 20 to Old Grand Port R.C. Aided School.

Two prizes of Rs. 12.50 each were obtained by Highlands Road Church of England Aided School and Mahebourg Government School.

Twelve prizes of Rs. 5 were also awarded.

6. Allotments

At the end of the year there were 145 allotment holders distributed as follows—

Richelieu	... 25	Barkly	... 55
Bigara (Curepipe)	.. 8	Elysée	... 5
Bois Marchand	... 34	Malherbe	... 18
	Total ... 145		

Only a few allotees were evicted, vacancies were immediately filled up by persons on the waiting list. The allotments were regularly inspected. Free distribution of planting material, timber and cane straw were made to all applicants.

Sub-Committee meetings are held on Tuesdays at the Central Experimental Station.

7. Visits to Estates and Planters

The Senior Agricultural Officer paid 116 visits to estates in order to keep in touch with the planting community and to inspect the food crop plantations.

The three Agricultural Instructors visit small planters in every part of the Island to give necessary advice about the use of insecticides and fungicides, the selection and application of fertilizers, propagation of the best new cane varieties and of various food crops. Arrangements have been made with the Co-operative Credit Societies, so that now the Agricultural Instructors are able to meet the shareholders in their villages and to discuss with them various questions of agricultural interest ; they are also encouraged to visit the experimental stations in order to follow the work in progress.

8. Tea

As a result of the report submitted to Government in 1940 on the position of the local tea industry, an Advisory Committee was set up by Government. Some recommendations have already been made and action has been taken with various matters connected with the industry.

9. Higher Agricultural Education

The Agronomist was appointed to lecture in Agricultural Geology and Principles of Tropical Agriculture, whilst the Agricultural Officer was placed in charge of practical demonstrations. The Senior Agricultural Officer continued his lecture on Tropical Crops. These changes took place in April, 1941.

10. General

The Senior Agricultural Officer returned from Rodrigues on the 28th February, having completed his mission to delimitate fresh areas, the redistribution of certain leased lots and the demarcation of " critical areas " *i.e.* lands which are liable to excessive erosion. This work was undertaken with the co-operation of the Assistant Conservator of Forests and the Magistrate of Rodrigues. The Senior Agricultural Officer was appointed Food Production Officer for the districts of Grand Port and Savanne.

2. The Agronomist, who had been mobilized for military duties in August—September, 1940, and subsequently released for agricultural works, was again called to the colours on 1st July, 1941. He attends at the Central Experimental Station every Friday for agricultural duties.

3. The Agricultural Officer has throughout the year assisted the Veterinary Division for work at Palmar Cattle Station. He supervises the raising of food crops at the Detainment Camp and is also Food Production Officer for Moka and Flacq districts.

4. The Assistant Agricultural Officer, in addition to his normal duties, is also an additional Inspector of the Co-operative Credit Societies and Assistant Food Production Officer for Grand Port.

5. Agricultural Instructor Rivalland was transferred on promotion to the Chemical Division. Overseer Rochecouste who is now stationed in Rodrigues was promoted Agricultural Instructor. Mr. L. G. Ducasse a former student of the Agricultural College has been selected for the vacant post of Overseer Rodrigues.

C. A. O'CONNOR,
Senior Agricultural Officer.

Co-operative Credit Societies Division

The personnel attached to the co-operative movement in an official capacity at the close of the year consisted of—

(*a*) Registrar, who is also Director of Agriculture ;

(*b*) Joint Registrar ;

(*c*) Assistant Registrar ;

(*d*) three whole-time Inspectors of whom one is stationed at Rodrigues ;

(*e*) a part-time Inspector with combined duties of Agricultural Officer ;

(*f*) a Clerical Assistant.

The following changes occurred in the staff of the Inspectors—

Mr. S. Seerbookun, whole-time Inspector, was killed in a motor car accident on the 19th May, 1941, and was replaced by Mr. O. S. Geerjanun as from the 26th September last.

2. Seven new Societies were registered during the year. Of these 5 were in Mauritius and 2 (one of which a Fishermen Co-operative Society Limited) in Rodrigues. The number of Societies in active operation at the close of the year was 59 in Mauritius and 11 in Rodrigues. With the exception of the Rodrigues Fishermen Co-operative Society Limited, all the others are of the Unlimited Liability type.

3. Following the continuance of the policy whereby members are allowed to increase their shareholdings by deduction from loans granted to them, the owned capital of the Societies is on an ascending scale. Whilst strengthening their working capital, this policy is a step leading towards the attainment of one of the chief aims of the movement, viz., encouraging thrift amongst agriculturists of limited means.

The amount of money loaned from Government during the year was Rs. 81,350. This has been advanced to 21 Societies. Repayment of instalment of loans due to Government totalling Rs. 5,380 was punctually effected to the Treasury.

The aggregate amount of the loans due to Government at the close of the year was Rs. 120,730 and was held by 33 Societies operating in Mauritius and 10 in Rodrigues.

4. In accordance with the principle adopted by all the Societies that the Registrar shall be the guide in all matters of administration, all the applications for loans by the members were scrutinised by the Managing Committees in the presence of an Inspector, and their issue closely supervised in order to see that they were fairly distributed and that they were not granted for speculative undertakings. The sureties were carefully imbued with a sense of their responsibilities and the committees and the members were likewise encouraged to see that loans issued were expended on the purposes for which they were granted. As a result of this procedure which amounts to an insistence upon the principle of punctuality in cultural operations (for which capital is provided by the Societies) coupled with the promptness with which members obtain their seasonal requirements, there is now a clear indication of a gradual improvement in their economic condition and in the development of the movement.

The principal loans issued were for cultivation purposes (the bulk of which was for cane cultivation), while in special cases loans were also issued for purchase of cattle, repairs to huts, paying costs of notarial deeds, marriage, etc. The dates of repayment of the loans were fixed with reference to the harvesting and sale of the crop, except in respect of those issued for cane cultivation which were recoverable—

(*a*) either before the borrowers harvested their crop in case they elected to sell their produce individually ; or

(*b*) after the completion of their crop when they co-operated in the collective sale thereof.

The arrangements made for the recovery of the loans have been a step towards (i) easing the committees in the discharge of their onerous duties relative to the supervision of the punctual repayment of loans ; ii) enabling the Societies to maintain a definitely satisfactory standard of recovery.

5. The experience gained during the first year's operation of the legislation which controls cane transactions has been very encouraging indeed. All the Societies which co-operated in the sale of their sugar canes have realised higher prices than those actually paid by the middlemen to their clients. This has, in no uncertain manner, increased the value of the Societies to their individual members.

6. An interesting feature is that Societies having surplus funds after having satisfied the requirements of their members have, in terms of the provisions of the Co-operative Credit Societies Ordinance, been authorised to invest such surplus in the purchase of War Savings Certificates. A total of Rs. 12,450.06 has, so far, been invested by them in this direction.

7. For facility of reference and with a view to having the law on the Co-operative Credit Societies contained in one enactment, Ordinance No. 49 of 1941 "to consolidate and amend the law relating to the constitution and control of Co-operative Credit Societies" was passed on the 30th September, 1941.

8. In June, 1941, a Special General Meeting of the Saint Pierre Co-operative Credit Society was held for the purpose of enabling Major G. St. J. Orde Brown, O.B.E., Labour Adviser to the Colonial Office, who was on a short visit to the Colony, to meet the members of the Society and to obtain some insight into the co-operative movement in Mauritius.

9. The work of the Co-operative Credit Societies forms the subject of a special report issued after the close of the financial year. The details of the working thereof for the financial year ended 30th June, 1941, are shewn in such report.

10. I conclude by expressing my very deep regret at the untimely death of Mr. S. Seerbookun. His devotion to duty, his intimate knowledge of the lives and occupations of the members and his general ability were a great asset to the Co-operative Credit Societies in Mauritius.

M. BURRENCHOBAY,
Joint Registrar, Co-operative Credit Societies.

Division of Plant Pathology

1. Incidence of Sugarcane Diseases

Extensive surveys of cane lands were carried out at different periods during the year with a view to assess the extent of red rot infection on M.134/32. The disease was found to be more prevalent in Grand Port, Savanne and Flacq districts, but the percentage infection of any field was small and the results obtained so far indicate that this variety is commercially resistant to red rot.

A positive correlation was established between the date of planting and frequency of the disease and it is recommended that M.134/32 should be planted as a "petite saison" cane (May-August planting) in order to escape infection.

Red rot was also recorded for the first time on M.72/31 in several localities, while serious outbreaks of the disease occurred on M.168/32 both in Moka and Rivière du Rempart.

It is considered that M.168/32 is too susceptible for commercial planting.

Root disease seriously affected Co. 290 at Union Park Estate, the disease assuming the true root rot type caused by various species of *Pythium*.

Several cases of top rot (*Fusarium moniliforme* Sheld.) ? on B.H.10/12 were reported from estates in Flacq and Pamplemousses districts.

2. Research work on Sugarcane Diseases

A.—Gumming Disease (*Bacterium vasculorum* (Cobb) Gr. Sm.)

Inconclusive results were obtained from an experiment laid out to study the development of the disease under different climatic conditions on resistant, tolerant and susceptible varieties. Heavy leaf spotting by *Cercospora longipes* Butl. interfered with the growth of the organism in the leaf and the stripes could not be measured with accuracy.

B.—Red Rot (*Colletotrichum falcatum* Went)

Experiments to test the reaction of new seedlings to red rot were continued with the Geneticist, Sugarcane Research Station. Mature canes of different varieties were planted upright (about 8" under ground) in infected furrows. Random samples were examined at fortnightly intervals during three months and some interesting results were obtained. A resistant variety (White Tanna) showed no symptons of the disease throughout the duration of the experiment, while a susceptible variety (M.73/31) was readily infected.

It was found difficult, however, to differentiate between the extent of infection in a commercially resistant (M.134/32) and a susceptible variety (M.73/31).

The effect of phenolic compounds on growth of *Colletotrichum falcatum* was determined by growing the fungus on Peptone-saccharose medium containing from 0·01% to 0·04% gallic acid, tannic acid, resorcinol and tyrosine. Tannic acid and resorcinol were both found to have a marked effect in reducing growth at concentrations above 0·02%. The effects of gallic acid and tyrosine were not significant. Phenolic compounds isolated from cane stems by the Botanist, Sugarcane Research Station, had no detrimental effect on growth. Further experiments along similar lines are in progress.

3. Diseases of Tobacco

Black Shank (*Phytophtora parasitica* Dast. var. *Nicotianæ* Ashby) was more prevalent in the fields during the year under review, probably owing to the high temperatures prevailing in June, July and August. Mosaic was also widespread in the fields and several severe cases of the enation type were recorded in Port Louis district. A scheme for research on black shank resistance was prepared in collaboration with the Tobacco Officer, and an Agricultural College graduate was appointed in December to work in connection with the pathological aspect of the problem.

4. Miscellaneous

A.—Maize.

Early in the year an outbreak of a disease occurred in experimental fields at La Ferme and Richelieu, on newly introduced varieties from South Africa. The worst affected variety was Hickory King. The characteristic symptom of the disease was a rapid, soft rotting of the stem tissues towards the base of the plants, resulting in a toppling over of the stalks, chiefly in the case of young plants. A bacterium was isolated and its characters found to resemble closely those of *Bacterium dissolvens* Rosen. Preliminary experiments indicate that the local variety of flint maize is more resistant to the disease.

B.—Control of *Wickstroemia indica* (Merr.)

Experiments on the control of *Wickstroemia indica* (Herbe tourterelle) by *Phytophtora parasitica* Dast. were continued during the year. Satisfactory results were obtained, but further experiments are required before large scale inoculations can be put into practice.

C.—Citrus Canker at Rodrigues.

The writer visited Rodrigues in November to report on the Citrus Canker situation in that island As a result of his visit it was recommended that all citrus trees occurring in a certain zone of the island should be destroyed so as to protect the canker-free region where a considerable number of citrus trees still occur.

D.—New Records of Plant Diseases.

Plant diseases not previously recorded in the island included bacterial stalk rot (*Bacterium dissolvens* Rosen) ? and Smut (*Sphacelotheca reiliana* (Kuhn) Clint.) ? of maize; foot rot (*Phytophtora Spp.*) of pea, phlox, and parsley; Penicillium corm rot of gladiolus on a consignment of gladiolus from England, together with 12 other diseases of minor importance.

5. General

In addition to the work on plant diseases, experiments on pasture improvement were continued during the year, and an annotated list of plants growing at the Royal Botanical Gardens, Pamplemousses, was prepared in collaboration with the Senior Agricultural Officer. The writer was also appointed Food Production Officer for the districts of Pamplemousses and Rivière du Rempart.

The following articles were published during the year:

Wiehe, P.O. "La morve rouge de la canne à sucre," *Rev. Agric. de l'Ile Maurice*, Vol. XX, 198–202, 1941.

Orian, G. "Hosts of the Sugarcane gumming disease organism," *Rev. Agric. de l'Ile Maurice*, Vol. XX, 19–58, 1941.

P. O. WIEHE,
Plant Pathologist.

Sugar Technological Division

1. Visits to Factories, Investigations, etc.

The 37 factories of the Colony were visited by the Sugar Technologist during the year under review as well as the six distilleries producing rectified spirit. Investigations were carried out in several of them, particularly in connection with the application of d'Hotman-Berenger process of clarification (briefly described in the Annual Report for 1940) and a new process of sugar boiling in one factory.

The results obtained with the above mentioned clarification process confirmed those obtained in 1940. Refractory juices were as easily clarified as non-refractory. In one factory plantation white sugar was manufactured by the new process in conjunction with sulphitation. The advantages derived were even more striking than for the manufacture of raw sugar. In both cases economy in filter press cloth was realised; there was a marked gain in recovery and less sulphur was needed for the production of a good grade of plantation white.

A new process of sugar boiling, still in the experimental stage and which seems to be in contradiction to all established theories, gave promising results.

2. Investigations on the production and use of Power Alcohol

Samples of rectified spirit were collected from the six distilleries; experiments were carried out in the laboratory and tests were made with motor cars. The results obtained showed that the rectified product contains at least 94% alcohol by volume, that it is of good quality and can be used neat or mixed with 25% to 30% petrol without inconvenience or danger of injury to internal combustion engines (lorries, motor cars, etc.), and with but slight adjustment of carburettors.

3. Controle Mutuel and Factory Results

Thirty-two factories contributed to the fortnightly returns which were distributed as usual. All factories forwarded the final figures. The sucrose content of the cane averaged 13·27 as compared with 13·31 and 12·71 in 1940 and 1939 respectively. The quality of the juice was satisfactory as a rule, but some difficulty was encountered with refractory juices from certain new seedlings. The average purity of the mixed juice was 85·3 as compared with 85·3 and 84·6 in 1940 and 1939 respectively. The recovery on an 85 purity basis was 89·2 against 88·9 and 88·8 in 1940 and 1939.

4. Educational

The usual lectures and practical demonstrations were delivered by the Sugar Technologist to students of the Agricultural College who were also taken on visits to sugar factories.

LOUIS BAISSAC,
Sugar Technologist.

Division of Entomology

1. Staff

The Entomologist devoted almost all his time as Deputy Chief Censor. The Assistant Entomologist remained in charge of the Division during the year under review. The Scientific Assistant, Mr. J. Vinson, was appointed on the 18th September, 1941, as Librarian and Curator, Mauritius Institute. He was replaced by the Scientific Assistant, Mr. R. Mamet, transferred from the Chemical Division. The Second Phytalus Officer, Mr. P. Régnard, was transferred to the Labour Department as Labour Inspector on the 11th March, 1941. Mr. F. Nadeau was appointed to replace Mr. P. Régnard. Mr. L. de Chastaignée Dumée joined the Royal Air Force on the 19th June, 1941. Mr. A. Delord, the Chief Phytalus Officer, joined the Detainment Camp, Beau Bassin, on the 27th January, 1941, to work on the control of flies, mosquitoes and other vegetable pests in this locality. The Entomologist was appointed as Consulting Entomologist for the campaign of flies, mosquitoes and other insect pests at the

Detainment Camp. The laboratory attendant, M. Paniapen, was also detailed to work at the Detainment Camp from the 27th January, 1941, to the 8th September, 1941. During the flies and mosquitoes campaign at the Detainment Camp in the summer of 1941, nearly all the staff of the Entomological Division was engaged on this work for about a fortnight. On the original staff of 8 officers in the Division, 5 devoted nearly all their time during the year on war duties whilst the remaining 3 were partly engaged on special entomological work pertaining to the actual war conditions.

At the present time of writing, the staff is depleted to its utmost; all the vacancies, consequent to the transfer, promotion or active war service of the above-mentioned officers, were filled by students of the College of Agriculture who had terminated their course.

2. Pests of Sugarcane

A.—*Phytalus smithi* Arrow.

This insect is still the major pest of sugarcane in the Island in spite of all efforts in the past and in recent years to further its control by the importation of parasites and predators.

Of the numerous scoliid-wasps imported, only one species, *Campsomeris phalerata* Sauss., can now be found in fairly large numbers, in heavily infested centres; the other species are scarcely found. It appears that there has been a gradual displacement of *Campsomeris* species in the Island, viz., *Campsomeris cælebs* Sich, displaced by C. *pilosella* Sauss. and the latter by C. *phalerata* Sauss. Of the two predators imported, viz., *Pyrophorus luminosus* Ill and *Bufo marinus* L., it can be safely stated now that their introduction was a failure. With regards to the hand-collection of Phytalus, a most careful investigation was done this year in the Island; the following conclusion was arrived at—

> All the planting community agrees in the opinion that the cessation of hand-collection has by no means aggravated the attacks on sugarcane due to Phytalus in Mauritius. In this island sporadic outbreaks are bound to occur from time to time and they are generally accompanied by a flow of parasites which closely follow the pest in satisfactory numbers. Propaganda for the planting of Phytalus-resistant varieties and of short season planting was done as usual and advice was given to planters for the maintenance in cane fields of food plants for parasites.

B.—Borers.

Owing to the prevailing war conditions, the initial project of importing borer parasites from foreign countries had to be abandoned during the year under review. The grant in aid from the Colonial Development Fund for borer investigation work lapsed in July, 1941, and since, the investigational work is wholly sustained by the planting community.

Mass-breeding and liberation of the egg-parasite *Trichogramma evanescens* Westw., imported from Ceylon in 1939, was tried on a small experimental basis at Belle Vue (Harel). On an area of 50 acres,

over 1,500,000 parasites were liberated during the period of January to July, 1941. A total of 1,756 batches of eggs, representing 35,120 eggs, was collected in the experimental fields; not a single egg was found parasitised by *T. evanescens*. Also no significant difference of borer infestation in the experimental and control plots was noticed. The experiment showed that this parasite did not acclimatize itself in the fields, on eggs of *Diatraea*. Since August, 1941, another series of experiments was tried with the local egg-parasite, *Trichogramma australicum* Gir.

This parasite was liberated in three different centres on a large scale on areas of 10, 10 and 15 acres respectively. From August to December, 1941, a total of over 500,000 parasites have been liberated. The following table summarises the mass-liberation of *T. australicum* during the months of August to December, 1941—

Locality	*Variety under experiment and acreage*	*Total number of parasites liberated*	*Mean number of parasites liberated per month*	*Mean number of parasites liberated per acre during a period of 5 months*	*Mean Number of parasites liberated per acre per month*
Beau Vallon	B.H.10/12 & 134/32 (virgins) 40 acres	319,000	63,800	7,975	1,595
Beau Champ	B.H.10/12 (virgins) 10 acres.	87,000	17,400	8,700	1,740
Belle Vue ...	B.H.10/12 & 134/32 (ratoons) 15 acres.	186,000	37,200	12,400	2,480

The liberations are still in progress and will continue until next crop season.

Searches on the incidence of parasitism by *T. australicum* were started; 5,909 egg batches, representing 112,271 eggs, were collected from March to December, 1941. The mean percentage of batches parasitised amounted to 1·81. May to July appear to be the months during which parasitism is at its peak with a mean of 3·5 batches parasitised % batches and a maximum of 7·5% and a minimum of 0·67%. The following table shows the incidence of parasitism—

Month	*No. egg batches collected*	*Per cent Parasitism by T. australicum*	*Per cent Parasitism by Telenomus sp.*
January	— ...	— ...	—
February	— ...	— ...	—
March	45 ...	— ...	—
April	432 ...	1·39 ...	—
May	653 ...	4·28 ...	—
June	522 ...	3·06 ...	—
July	531 ...	3·20 ...	—
August	245 ...	1·22 ...	—
September	577 ...	0·34 ...	—
October	1,022 ...	0·78 ...	—
November	690 ...	1·74 ...	—
December	1,192 ...	1·26 ...	—

Mean parasitism for the year : 1·81

With the help of the Sugarcane Research Station, variety resistance trials are being laid down in some infested centres; it is too early to report on the results.

No recovery was made of all the various borer parasites imported, except *Xanthopimpla stemmator* F. which was previously recorded last year. This parasite was scarce during 1941; its distribution could not be effected on a large scale to planters concerned.

The constant temperature room worked satisfactorily during the year. A total of 7,678,000 *Corcyra* eggs were collected and used for breeding *Trichogramma* spp. It was found that a mean of 88 eggs were obtained per female *Corcyra*, and the sex ratio was 29 females % individuals. The life cycle of *Corcyra* was 58 days when bred on maize as compared to 66 days when bred on wheat flour—mean temparature 28°C., mean relative humidity 70%.

It was found that one of the greatest disadantages of *T. australicum* for mass-breeding, is its sensitiveness to low temperature; its breeding could not be effected on the same line as *T. evanescens*. Eggs parasitised by *T. australicum* could not be kept at 4°C., the emergence was in this case reduced by 95%, the pupæ being very sensible to cold. The life cycle of *T. australicum* was found to be 8 days in summer and 14 days in winter (summer mean temperature 24°C.; winter mean temperature 18°C.); the mean percentage of *Corcyra* eggs parasitised by *T. australicum* was 80%. It was also found that another strain of *Trichogramma* obtained from *Achæa* eggs readily parasitised *Diatræa* eggs in the laboratory.

Experiments were carried out on the effect of cold storage on Corcyra eggs and the parasitism of same by *T. evanescens* Westw. The following table summarises the results obtained—

	Number of days Corcyra eggs were placed in refrigerator	*% eggs hatched*	*% eggs parasitised by T. evanescens*
A	7	14	76
B	14	0	24
C	21	0	10
D	28	0	7

The eggs were kept in miniature stoppered tubes to avoid dessication and at a temperature between 0 and 3·3°C during the whole experiment. It follows from the above that *Corcyra* eggs cannot be used for breeding *T. evanescens* when older than 7 days in refrigerator; the % of parasitism drops from 76% to 7% between 7 to 28 days. The same experiment is in progress with the local *T. australicum*.

The breeding of *Diatræa* was studied in the fields as well as in the laboratory; the total life cycle was found to be 73 to 90 days. Three periods of attacks were observed on virgin canes during the year, this giving rise most probably to 3 borer generations per year.

The role played by predators of borer eggs was closely watched in the fields; no definite conclusion can yet be made on the value of the various predators.

A borer survey was carried out in some heavily infested fields of B.H.10/12 and 134/32 planted in various localities. The results are the following—

Variety	*Mean stalk infestation*	*Mean joint infestation*
B.H. 10/12 ...	85·2 ...	20·9
134/32 ...	91·1 ...	21·5

Through the variety 134/32 is as much invested as B.H.10/12, yet the yield per acre in the former variety was greater. The dangers inherent in the widespread planting of borer susceptible varieties are once more stressed.

C.—Scale Insect (*Aulacaspis tegalensis* Zehnt.)

In September, 1941, an outbreak of the scale *A. tegalensis* was reported from several estates situated in the Black River district. This insect was found in fairly great number on some estates and in one case 25% of the sugar cane under cultivation was reported heavily infested. A reduction in yield of 5—10 tons per acre was reckoned by some planters and a marked decrease of the sucrose content in infested canes was reported at the factory. To cope with this pest, a special officer was appointed late in December to investigate on the status of this insect in the Island.

A systematic survey has since been carried out in the Black River district and the study of the bionomics of this insect has been started. To further the control of this scale, mass-breeding and liberation of the predators *Chilocorus politus* Muls. and *C. nigritus* Muls. is contemplated for the forthcoming year.

3. Pests of Stored Products

A.—Maize Seeds.

Of the various methods recommended for the storage of maize seeds, the treatment of maize on cobs with an emulsion of diesel-clay was the one adopted in most cases by planters concerned. The method consisted in soaking previously dried cobs during 10–12 minutes in a diesel-clay emulsion (1 : 1) diluted to 10% oil. About 50 gallons of the diluted emulsion was recommended for one ton of maize on cobs. Some complaints were received as to the efficacity of the method but it was found that in many cases bad results were obtained for the following reasons—

(*a*) use of cobs insufficiently dried.

(*b*) treatment of cobs previously infested in large proportion by *Calandra* and *Sitotroga*.

(*c*) improper soaking and manipulation.

(*d*) use of home-made emulsion instead of the officially prepared one.

(*e*) improper ventilation and storage room.

When properly done, the above treatment can protect the maize seeds on cobs for at least 4–5 months.

It was also found that this method cannot successfully be used in places where the initial relative humidity of the air is very high; the moisture content of the maize seeds rises to above 13% and in such cases the insect attack was 100%. Further experiments are in progress for the search of other adequate methods of storage of maize seeds for use in localities of high relative humidity.

B.—Tobacco.

The systematic use of the Phantomyst in the stores of the Government Tobacco Warehouse continued to prove extremely useful in reducing the attacks of the tobacco beetle, *Lasioderma serricorne* L. No fumigation with HCN gas had to be used during the year. The predator, *Thaneroclerus buqueti* Lep., was very active during the year, and may have also helped in checking the pest.

4. Pests of Coconut

The coconut plantations of the Island are rapidly improving each year. The Javan coccinellid, *Chilocorus politus* Muls. and the Ceylon one *C. nigritus* Muls., are cleaning the coconut plantations of the scale *Aspidiotus destructor* Sign. At certain times of the year, it was very difficult to obtain the scale on coconut leaves for subsequent breeding of the above-mentioned coccinellids. It can now be safely recommended to planters to restart the systematic planting of coconut in the Island; predators are now present in the Island to check the coconut scale, should this insect pest threaten their plantations.

5. Pests of Pineapple

Very few planters treated their plantations during the year with diesel-clay emulsion to combat the mealy-bug *Pseudococcus brevipes* Ckll. All possible effort was made to convince planters of the necessity of checking the mealy-bug, with a view of decreasing the wilt disease in their plantations, but prevailing economic factors have caused a lack of interest in this crop.

6. Miscellaneous Pests

A.—Bean Fly (*Melanoagromyza phaseoli* Coq).

The use of diesel-clay emulsion diluted to 1% oil continued to prove useful in combating this pest at its early stages of attack. *Melanoagromyza phaseoli* was found breeding in fields on another host plant: *Solanum nigrum*; this is a new record for the Island. Bean plants should consequently not be allowed to grow in fields contiguous to *Solanum nigrum* plants.

B.—Citrus Pests.

The following insects attacking Citrus plants are new records—

(*a*) Cecidomyid (*Contarinia* Sp.)

A Cecidomyid was bred from flowers of Citrus, its larvæ were found feeding on some part of the floral organs causing sometimes an early dropping of the flowers.

(*b*) Conjointly with the above, lepidopterous larvæ were found attacking Citrus flowers. Adults obtained therefrom were the following:

Prays citri Mill (?) and *Chlorocystis* sp. (?) These new pests are under study.

C.—Sweet Potato Pests.

The increase of area planted on sweet potatoes led to the appearance of insect pests attacking this crop. One leaf-miner, *Elachista* sp. (?), was found particularly active, but was not very troublesome to the various plantations in the Islands. The leaf roller, *Trichoptilus wahlbergi* Zell., was also a pest of secondary importance. This species was parasitised by a tachinid fly.

D.—Maize Leaf-Miner (*Agromyza* Sp.)

Another insect recorded for the first time in the Island on maize is a leaf-miner which was found to be a pest of this crop during the year.

E.—Termites.

The following mixture was widely recommended against termites—

Arsenious oxide	40%
Potassium antimonate	5%
Borax	2%
Jeweller's red	53%

It was found 100% effective against the cartoon-nest termite, *Nasutitermes voeltzkowi* Wasm.; dry-wood termites, mainly *Cryptotermes pallidus* Ramb., are more difficult to control owing to the absence of runways and their isolated colonies in infested wood. The Public Works Department and the Railway Department are now using systematically the above mixture for the treatment of their buildings. In this connection, officers of these Departments were previously trained to that effect.

F.—Flies and Mosquitoes.

An acute outbreak of these pests occurred in the Beau Bassin Jewish Detainment Camp, consequent upon the arrival at short notice of 1,800 detainees at a period of exceptionally hot and wet weather.

The immediate problem was one of the preparation and application of contact sprays and repellants. The emergency found the Division excellently equipped for this task, and within a few days large quantities of pyrethrum-kerosene spray and diesel-creoline repellants were being applied with success throughout the Camp and its surroundings. In co-operation with officers of the Medical and Public Works Departments, extensive sanitation and screening measures were put into operation. A camp area maintenance scheme was drawn up and the main provisions have since been put into practice successfully. The cultivation of the whole of the surrounding area in vegetables not only provides some of the food requirements of the Camp, but ensures that fly and mosquito breeding places are reduced to a minimum.

7. General

Advices on various pests of forests and forests products were given during the year to the Forest Department and visits to various forest localities were made in this connection.

Lecturing and demonstration duties in Entomology and Zoology were carried out to students of the Agricultural College by the Assistant Entomologist, the Scientific Assistant (partly Mr. J. Vinson and partly Mr. R. Mamet).

During the year, the Entomologist accompanied by the Assistant Entomologist visited various estates once or twice per month and discussed various insect problems with planters concerned.

A. MOUTIA,
Assistant Entomologist.

Chemical Division

Investigation work

1. Power Alcohol

In co-operation with the Sugar Technologist, an investigation was undertaken in order to determine the chemical characteristics of alcohol produced locally and to ascertain if the product put on the market does not contain any constitution injurious to engines.

The following figures give the average composition of the power alcohol produced by the six local distilleries working during the year under review—

Distilleries	*Alcohol* %	*Total Solids* %	*Acidity*	*Aldehydes*
A	95·1	·003	·8	·015
B	94·1	·001	·5	·018
C	95·1	·0025	·5	·010
D	94·1	·005	1·2	·028
E	92·9	·006	2·0	·025
F	95·1	·001	·8	·014

On the whole the figures are quite satisfactory.

2. Eucalyptus Oil

Seeds of *Eucalyptus Staigeriana* received from Pretoria in January, 1940, were planted at Abercrombie Nursery.

The leaves were distilled in July and December 1941, yields of 2·4% and 2·5% respectively were obtained. The odour of the oil is quite pleasant.

3. Tobacco

The "selection" experiment is still in hand and as in previous years plots were planted with the progeny of plants obtained from "elite" seeds. Results are encouraging.

4. Hydrogenation of Coconut Oil

In connection with the several chemical problems involved in this new industry, advice of the chemist has been sought from time to time, and many technical difficulties encountered during the process were overcome satisfactorily.

5. Camphor

At the request of the Conservator of Forests a series of determinations were performed in order to ascertain the yield and quality of samples secured from plots located near the Curepipe Botanical Gardens.

6. Pastures

At Palmar, experiments on the seasonal variations of pure species of grasses grown under similar soil conditions and receiving different fertilizers treatment are still in hand.

In view of narrowing the P_2O_5 : Ca O ratio in certain areas, the effect of treatment of appropriate fertilizers has been tried and samples of grasses are analysed periodically.

At the Government Dairy, Curepipe, experiments were started in order to determine the effect of fertilizers on the two species—

(*a*) Kikuyu
(*b*) Elephant grass.

Fertilizers were applied early in January and samples were collected and analysed quarterly.

Milk

The analysis of samples of milk from the Government Dairy was performed as usual in the months of January, April, July and November respectively. The average figures given below are quite in keeping with those of the previous year—

	Fat	*Solids not fat*
Morning milk ...	... 3·3%	... 8·62%
Evening milk ...	... 4·2%	... 8·87%

Routine analysis

Ninety-seven samples were received involving one hundred and ninety-two determinations. The research work included the analysis of 362 samples, 922 estimations being carried out.

Miscellaneous

The assistant chemist Mr. F. Berchon, who had been called to military duty, returned to Mauritius and resumed duty in April.

In May Mr. R. Manet was transferred to the Entomological Division. Mr. R. Hermelin a former student of the College of Agriculture was in June put in charge of the chemical work in connection with the investigation on pastures in the room of Mr. F. Durocher-Yvon, who acted as Scientific Assistant in the Chemical Division until the appointment of Mr. R. Rivalland who assumed duty in November.

R. LINCOLN,
Chemist.

Tobacco Research Station

During the year under review work on the establishment of the Station was completed The Station occupies an area of approximately 37 acres exclusive of roads: 32 acres, of which 3 are occupied by buildings and nurseries, having been cleared under the grant issued by the Colonial Development Fund and a further 5 acres cleared by the unemployed has been taken over for seed production for air cured varieties.

Climatic Conditions

Conditions were extremely favourable during the early part of the season but the later periods were very dry and warm which affected adversely the later plantings.

Rainfall, 1941

Month	*Inches*	*No. of days on which rain fell*	*Highest daily*	*Lowest daily*
January ...	8·15 ...	16 ...	3·68 ...	0·01
February ...	7·85 ...	14 ...	3·53 ...	0·02
March ...	4·34 ...	6 ...	2·06 ...	0·06
April ...	5·76 ...	9 ...	2·76 ...	0·02
May ...	0·04 ...	2 ...	0·03 ...	0·01
June ...	0·49 ...	7 ...	0·25 ...	0·02
July ...	0·56 ...	8 ...	0·14 ...	0·02
August ...	0·61 ...	11 ...	0·22 ...	0·008
September ...	2·01 ...	14 ...	0·54 ...	0·01
October ...	0·49 ...	4 ...	0·36 ...	0·01
November ...	1·13 ...	12 ...	0·35 ...	0·004
December ...	6·36 ...	5 ...	3·41 ...	0·008
Total ...	37·79	108		

Experimental work

Tobacco

A. Plant Breeding

1. No new varieties were introduced during the year and the plant breeding work was confined mainly to inter-variety selection with the varieties previously imported from Canada, particularly with those varieties which have proved to be superior in flavour.

The object of the selection being to increase yields in combination with the other desirable qualities. Much improvement has been accomplished and seed of selected strains is supplied to growers each year.

These strains are also tested each year at the Station, and during the year under review strains of the following varieties were tested, the trial being laid down in five randomised blocks with plots of 1/40th acre, there being five replications; Bonanza, Jamaica Wrapper, Virginia Bright, White Mammoth and Yellow Mammoth.

The results of the trial may be tabulated as follows—

Yield in Kilos per acre

	Bonanza	*Jamaica Wrapper*	*Virginia Bright*	*Yellow Mammoth*	*White Mammoth*	*General Mean*	*Sig. diff.*
Mean Yield ...	511	544	427	448	482	482	88·36
% General Mean..	105·9	112·79	88·61	92·84	99·85	100	18·32

The variety Jamaica Wrapper has given significantly better yields than the varieties Virginia Bright and Yellow Mammoth, there being no significant differences between the other varieties.

Grade Index

	Bonanza	*Jamaica Wrapper*	*Virginia Bright*	*Yellow Mammoth*	*White Mammoth*	*General Mean*	*Significant difference*
Mean ...	350	335	336	342	355	344	17·72
%General Mean ...	101·9	97·54	97·66	99·41	103·42	100	5·16

The variety White Mammoth has a significantly better grade index than either Jamaica Wrapper or Virginia Bright but there is no significant difference between the other varieties.

Cash Value in Rupees per acre

	Bonanza	*Jamaica Wrapper*	*Virginia Bright*	*Yellow Mammoth*	*White Mammoth*	*General Mean*	*Significant difference*
Mean ...	877	940	729	753	873	834	190
% General Mean...	105·1	112·6	87·4	90·3	104·7	100	22·7

2. Selection within the varieties—Charlie's Special, Harrison's Special, Cash, Yellow Pryor, White Stem Orinoco, White Stem Willow Leaf, White Stem Mammoth, White Stem Pearl, Yellow Orinoco and Little Orinoco was continued.

2. Colchicine Experiment

An experiment with the drug Colchicine was carried out with the primary object of ascertaining the most suitable strength of solution and length of immersion of seed necessary in order to induce mutations; most promising results were achieved which are to be the subject of a special report.

3. Hybridising

Some inter-variety crossing was carried out during the year with the object of ascertaining the compatibility of varieties for this work.

B. Field Experiments

1. Fertilizer Experiments

(*a*) An experiment to test the effect of varying levels of nitrogen, phosphorus and potash was carried out in the same manner as in 1939 and 1940. Full details regarding the design and levels of fertilizers are given in the 1939 report. The variety used in the experiment was Jamaica Wapper.

The results achieved do not confirm fully the results of previous experiments and the results may be tabulated as follows—

S.E. of one plot 48·13 or 13·3% of the general mean yield in kilos per acre (± 20)

	N. 0.	*N. 1.*	*N. 2.*	*Mean (± 11)*
K.0. ...	320	351	421	364
K.1. ...	328	355	392	358
Mean (± 14) ...	324	353	406	361
	P.0.	*P.1.*	*P.2.*	*Mean (± 11)*
K.0. ...	318	398	375	364
K.1. ...	360	348	368	358
Mean (± 14) ...	339	373	371	361

From the foregoing it will be seen that there has been a significant response in yield to applications of nitrogen and the response to the double application is significantly greater than to the single. There is significant response in yield to single application of phosphate but not to double application.

As in previous years there was a depression in yields of plots receiving potash but this depression is not significant. There was no significant interaction effects.

Grade Index ± 5.6
S.E. of of one plot 13·7 or 3·75%

	N. 0.	*N. 1.*	*N. 2.*	*Mean ± 3·2*
K. 0. ...	365	372	360	366
K. 1. ...	362	373	361	365
Mean ± 4	364	373	361	366
	P. 0.	*P. 1.*	*P. 2.*	*Mean ± 3·2*
K. 0. ...	356	370	372	366
K. 1. ...	355	366	375	365
Mean ± 4	356	368	374	366

There was no improvement in grade of leaf by applications of nitrogen, there was, however, a significant response to the applications of phosphate and such response does not deviate significantly from a linear increase. No other significant differences are observable.

(*b*) An experiment to test the method and time of application was carried as in the previous year and full details regarding the lay out, etc., are given in the report for 1940.

The variety used in this experiment was Jamaica Wrapper. No significant results were obtained.

(*c*) An experiment to test the use of tablet fertiliser was carried out but the results showed no significant differences between tablets and normal fertilizers.

2. Spacing and Variety Trial

This trial was designed to test the effect of different spacings on two varieties; the spacings being: A. 3′ × 2′, B. 2′6″ × 2′, C. 3′6″ × 1′6″, D. 4′ × 1′6″; and the varieties used were: 1. Bonanza, 2. Jamaica Wrapper. The experiment was designed in 4 blocks of 8 plots, each plot being 1/40th acre.

The results may be tabulated as follows—

S.E. of one plot 53 22 kilos or 12·5% of mean yield kilos per acre ± 27

Spacings	*A*	*B*	*C*	*D*	*± 13*	*Mean*
Bonanza ...	515	486	454	432	...	472
Jamaica Wrapper ...	612	635	542	474	...	566
Mean ± 19 ...	565	560	498	453	...	519

The variety Jamaica Wrapper is significantly better than Bonanza at all spacings excepting spacing D. The spacings A and B are significantly better than the spacings C and D. The plant density under the spacings A and D are the same, whereas the plant density under spacing C is slightly greater than D.

The spacings in the rows of A and B are the same, viz., 2 ft., and that of C and D the same at 1 ft. 6 inches, therefore it may be concluded from the results that the spacing of 1 ft. 6 inches has had a depressing effect despite the increased inter-row spacing.

The grade index was analysed with the result that the variety Bonanza was found to produce a significantly better grade leaf than Jamaica Wrapper—

Grade Index ± 10
S.E. of one plot 20 or 5·2% of mean.

Spacings	*A*	*B*	*C*	*D*	*Mean ± 5*
Bonanza ...	392	421	393	393	400
Jamaica Wrapper ...	362	358	360	355	359
Mean ± 7 ...	377	389	376	374	379

The spacings in this experiment had no effect whatever upon the grade of leaf produced.

3. Chemical Investigations

Special progeny plots were planted with the progeny of plants selected by the Chemist in the previous year and further selection was carried out by the Chemist during the year under review.

A fuller report of these investigations are contained in the report of the Chemist.

4. Seed supply and utilization of New Varieties

Seed of approved varieties was supplied by the Station to the Tobacco Board for distribution to planters. The Tobacco Board called upon planters to grow a definite acreage under these approved varieties and during the year under review the Board issued certificates for the cultivation of the following acreages—

		Acres		*Quantity*
Amarello	...	298·7	...	195,219
New Varieties	...	151·13	...	75,565
		449·83	...	270,784

It will thus be seen that the quantity allocated for the new varieties constituted 39 per cent:, this percentage is to be gradually increased each year until the variety Amarello is entirely replaced.

The export of leaf is in the hands of the Tobacco Board and it is with this object in view that the Board are calling upon planters to increase the acreage under new varieties.

General

A.—Windbreaks.

The planting of trees was continued as opportunities occured, and several thousand Filao (*Casuarina equisitofolia*) and Cassia Florida trees were planted.

B.—Irrigation Works.

Further irrigation canals were built so as to enable the areas brought under cultivation to be irrigated.

A motor driven pump was installed to utilise the water from a deep well situated on the property.

Tobacco Station—La Ferme

This station was closed during the year under review and all work will, in future, be centralised at the Tobacco Research Station.

G. CORBETT,
Government Tobacco Officer.

Veterinary Division

Head I

A. Disease Control

(1) Field Operations.

The contagious diseases under control were : Piroplasmosis, Tuberculosis and Trypanosomiasis.

Piroplasmosis.—An outbreak of the disease occurred in three different parts of the Island ; immediate measures were taken and the "trypan bleu" treatment was applied. Out of the eleven animals treated nine recovered.

Tuberculosis.—827 bovines were tested during the year and 249 reacted, *i.e.*, 30%. The test was also applied in Rodrigues to ascertain whether the disease had or not obtained a foothold among the stock of that Dependency. Results showed conclusively that tuberculosis does not exist on cattle in Rodrigues.

Trypanosomiasis.—8,625 blood smears were examined deriving from 8,033 bovines, 584 equines and 8 goats. Three positive cases were recorded on bovines : one vivax and two evansi.

All three animals were treated and recovered.

(2) Research Operations.

Abortion on Cows.—The antistreptococcic vaccine was applied on cows at the Government Dairy and the results obtained were satisfactory. Only 7 cases of abortion were recorded during the year under review as against 20 in 1940.

B. Animal Husbandry

(1) Field Operations.

Of the 17 pure bred bulls imported in 1938, one Charolais bull died from septicemia as the sequel of a broken horn ; one Afrikander bull died from enteritis and a second one from piroplasmosis.

A Charolais bull reacted positively to the tuberculin test and is kept under strict isolation.

(2) Research Operations.

At the Palmar Breeding Experimental Centre, breeding operations continue to be carried out and the Afrikander breed appears to adapt itself well to local conditions while the Charolais does not thrive so far.

C. Improvement of marketing of animals and animal products

The Veterinary Officer visited the slaughterhouses of the Colony on fifty-nine occasions. The carcase of a locally bred bovine was seized and destroyed for generalised tuberculosis.

1,015 animals of the milch breed including 30 wounded bovines have been authorized to be slaughtered.

Animals imported for meat purposes—

From South Africa : 150 bullocks,

From Rodrigues : 785 bullocks, 2,349 pigs, 973 sheep and 4,994 goats.

D. Veterinary Education

Lectures were delivered to students of the 1st, 2nd and 3rd year in Anatomy, Physiology, Pathology and Animal Husbandry by the Veterinary Officer and the Assistant Veterinary Officer.

Head II

Quarantine

Réduit Government Kennels—

The 6 dogs imported in 1940 which were under observation at the beginning of this year, were released at the end of their 6-month period of observation ; two other dogs were imported in 1941 and have also been released in good condition.

Fort William Station.

The 150 beef bullocks imported from South Africa in March, 1941, were herded in quarantine at Fort William until slaughtered.

One young Friesland bull calf was kept under observation at Fort William prior to shipment for Rodrigues.

F. E. LIONNET,
Veterinary Officer.

Government Dairy

Yield of Milk

The amount of milk produced during the year was distributed as follows—

	1941 litres	*1940 litres*
Supplied to hospitals ...	10,067	12,267
Supplied to the public ...	57,726	70,711
Fed to calves ...	5,588	5,682
Samples for control ...	507	398
	73,888	89,058

Births.—31 calves were born during the year : 17 males and 14 females.

Deaths.—2 male calves died from weakness a few hours after birth ; 1 female calf died from colics ; 3 adult females died during the year from antepartem paralysis, foreign body in stomach and colics, respectively.

Sales.—14 calves were sold to breeders : 12 males and 2 females.

Abortion.—7 cases were recorded during the year as against 20 in 1940.

Tuberculosis.—The whole herd was tuberculin tested during the year and eight positive reactions were recorded while five cows gave doubtful reactions. The latter were re-tested six weeks later with tuberculin freshly received from Weybridge and three of them reacted positively. The eleven reactors were given to a butcher for slaughtering at the Curepipe abattoir in return for eight tuberculin tested milch cows of the local breed.

Y. LEFÉBURE,
Officer in charge of Dairy.

RODRIGUES

On the whole, weather conditions have been very unfavourable. Three cyclones occurred, the third of which on 22nd February caused considerable damage to crops: the yield of maize, in particular, was reduced by about 80%. Had it not been for the exceptionally high prices secured from the sale of livestock, the condition of the inhabitants would have been very bad.

Tobacco

Three hundred and eighty-two bales of cured leaf were exported. The value of the export was Rs. 17,075. The leaf produced was generally of good quality owing to improved methods of curing.

Coconut and Latania

Coconut trees at Oyster Bay were badly damaged by the cyclone. All seedlings available after the cyclone were transplanted but died shortly after. Only a few nuts were obtained for sowing this year.

The plantation of Latania has been extended.

Vanilla

The plantation has been badly damaged by the cyclone. Pods weighing 7,550 grs. were shipped to Mauritius from last year's crop and were sold for Rs. 444.89.

Food Crops

The compulsory planting of sweet potatoes after the first crop of maize has presented some difficulties owing to lack of adequate staff for proper control. New lands have been granted in the eastern, central and western localities to those inhabitants who are not lessees of any lands or to heads of large families who are cultivating only one or two acres. Measures have been taken so that on the 20th of January, 1942, all lands available for cultivation will have been planted with food crops.

Livestock

The livestock did not suffer to a great extent during the cyclones. Their number is steadily increasing and they are sold at remunerative prices.

The routine work at the stock farm was continued. One Friesland cow was slaughtered as having reacted to the tuberculin test. One cow, one heifer, one calf Sindhi and nine donkeys were sold. One young Friesland bull was imported from Mauritius. The black head persian rams have done well and the local breed have improved considerably since their introduction.

Animal Diseases

An outbreak of strongylosis occurred on goats and sheep. Appreciable results were obtained by drenching the animals with a solution of blue stone.

As a consequence of a case of tuberculusis on an Afrikander bull, it was decided to apply the tuberculin test to the bovines in Rodrigues; 1,526 bovines were tested, 6 with positive and 5 with doubtful results. The reactors were slaughtered locally or kept in quarantine pending shipment to Mauritius.

Insect Pests and Plant Diseases

Caterpillars have been troublesome in the western localities by their attacks on tobacco and sweet potatoes. Red ants were detected for the first time in Port Mathurin. Measures for the control of the pest were taken immediately. Citrus canker has been gaining ground. More drastic control measures had to be taken causing dissatisfaction amongst some inhabitants. The Plant Pathologist visited the Island in November and a programme of work on even more extensive lines has been laid down.

Improvement of Pasture

Undesirable plants were destroyed on wide areas in the cattle walk. Acacia, Paspalum dilatatum, Kikuyu, Rhode and Elephant grass were planted at Baie du Nord, Monique, Bay Topaz and Pistache.

Drinking troughs were maintained in good condition.

Control of Erosion

The works carried out proved very useful in reducing soil losses during heavy rains. At Citron Donis, stray goats destroyed a great deal of acacia planted on the contour lines of slopes.

In the holdings of planters progress is noticeable. At the request of the Magistrate, a new step to encourage works on soil defence has been adopted, viz., the remittance of rent in favour of those who have done efficient work on their lands.

Agricultural Propaganda

The Agricultural Superintendent visited on numerous occasions the holdings of planters. Several meetings were held and farmers as well as breeders have had every opportunity for taking advantages of the valuable information concerning agriculture that was passed to them.

The Agricultural Superintendent attended two meetings of the newly founded Society of Tobacco Growers when he delivered lectures on development and improvement of the tobacco industry in Rodrigues.

Miscellanous

The Senior Agricultural Officer visited the Island early in the year. During his stay the question of separating crown forests from agricultural lands was discussed with the Assistant Conservator of Forests.

It has been decided since that certain plantations in the cattle walk, established for the provision of shade trees, will be managed primarily for that purpose.

The Overseer of the Experimental Station and Stock Farm has been promoted Agricultural Instructor and will proceed to Mauritius early next year.

A cost of living bonus at the rate of 20% has been paid to labourers in accordance with Colonial Secretary's letter No. 1436/40/S.P. of 19th August, 1941.

R. JAUFFRET,
Agricultural Superintendent.

PART III

Legislation

The following Ordinances, Proclamations and Government Notices were passed during the year—

Ordinance No. 47.—To provide for the control of the sale and purchase of canes.

Ordinance No. 49.—To consolidate and amend the law relating to the constitution and control of Co-operative Credit Societies.

Proclamation No. 1.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of the " d'Epinay Co-operative Credit Society ".

Proclamation No. 2.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of " Les Mariannes Co-operative Credit Society ".

Proclamation No. 3.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of the " New Le Ravin Co-operative Credit Society ".

Proclamation No. 4.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of " Belle Vue Maurel Co-operative Credit Society ".

Proclamation No. 5.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of " L'Agrément Co-operative Credit Society ".

Proclamation No. 6.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of " Plaine Magnien Co-operative Credit Society ".

Proclamation No. 9.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of " Rivière Cocos Co-operative Credit Society (Rodrigues) "

Proclamation No. 10.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of " L'Escalier Co-operative Credit Society."

Proclamation No. 15.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of " Goodlands Co-operative Credit Society."

Proclamation No. 18.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of " Canton Belle Eau Co-operative Credit Society."

Proclamation No. 23.—To proclaim the price to be paid for " Uba de Riche Fond " varieties of sugarcane in the areas specified in paragraph 1 of Proclamation No. 18 of the 22nd July, 1939.

Proclamation No. 24.—To proclaim the price to be paid for " Uba de Riche Fond " varieties of sugarcane in the areas specified in paragraph 1 of Proclamation No. 20 of the 17th May, 1940.

Proclamation No. 26.—To prohibit the importation into Mauritius of certain plants.

Proclamation No. 32.—To put into force the Fruit Export Ordinance, 1940.

Proclamation No. 42.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of " Grenade Co-operative Credit Society (Rodrigues)".

Proclamation No. 47.—To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of " Rodrigues Fishermen's Co-operative Credit Society Ltd. (Rodrigues ").

Government Notice No. 95.—Regulations made by the Governor in Executive Council under article 16 of the Animal Diseases (Consolidation) Ordinance, 1925, as amended by article 2 of the Animal Diseases (Amendment) Ordinance, 1930, amending the Regulations published under Government Notification No. 198 of 5th September, 1925.

Government Notice No. 155.—Regulations made by the Governor in Executive Council under article 10 of the Fruit Export Ordinance, 1940.

Government Notice No. 169.—Regulations made by the Governor in Executive Council under article 10 of the Fruit Export Ordinance, 1940.

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